

Appl. No. 10/017,225
Amdt. Dated July 2, 2004
Reply to Office action of Mar. 26, 2004

Amendments to the Specification

Please replace paragraph [0002] on page 1 with the following rewritten paragraph:

-- An optical attenuator is a passive optical component for reducing optical power propagating in an optical fiber, and may perform fixed or variable attenuation. ~~Opti-eal~~Optical attenuators are widely used in optical transmission systems and optical networks. --

Please replace paragraph [0019] on page 4 with the following rewritten paragraph:

-- As shown in FIG. 1 and FIG. 2, an electrical variable optical attenuator 10 of the present invention comprises a housing 1, a cover 2, an attenuating means 3, an optical module 4, an electrical driving element 5, an input fiber 87, an output fiber 86, an input fiber collimator 81, an output fiber collimator 80, boots ~~120, 121~~120, 121 and fiber housing ~~110, 111~~110, 111. --

Please replace paragraph [0020] on pages 4 and 5 with the following rewritten paragraph:

-- The housing 1 ~~forms~~formed by four sidewalls (not labeled) and a bottom wall ~~[[()]]16[[()]]~~ and defines an inner cavity (not labeled) therebetween. A screw hole 132 is defined in a sleeve (not labeled) protruding into the middle of the inner cavity (not labeled) of the housing 1. A plurality of pin holes 133 are defined in a corner of the bottom wall 16 of the housing 1. Two side holes ~~130, 131~~130, 131 are defined in one sidewall (not labeled) of the housing 1. --

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Please replace paragraph [0022] on page 5 with the following rewritten paragraph:

-- Also referring to FIG. 5, the attenuating means 3 comprises a carrier 30, a filter 32 and a sliding patch 31. The carrier 30 ~~comprises~~ defines an insertion slot 303 in a top thereof for fixing the filter 32 therein ~~on top of the carrier 30, and a~~ guide groove 301 ~~defined in a bottom of the thereof.~~ The carrier 30~~[[,]]~~ also comprises an inner screw 302 and a slot 304 separately ~~defined~~ disposed in both opposite sides ~~of the carrier 30 thereof.~~ The sliding patch 31 is fixed in the slot 304, and comprises a wiper portion 310 for contacting ~~with~~ the resistor 57. The filter 32 has a varying optical density gradient along at least one of its dimensions.

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Please replace paragraph [0023] on pages 5 and 6 with the following rewritten paragraph:

-- Also referring to FIG. 6, the optical module 4 comprises a guide pole 41, a first mirror 44, and a second mirror 45, and defines a through hole 48, a pair of containing grooves ~~42,43~~ 42, 43, and a guide hole 47. The containing grooves ~~42,43~~ 42, 43 separately fix and hold the fiber collimators ~~80,81~~ 80, 81 parallel to one another, each fiber collimator ~~80,81~~ 80, 81 being separately directed ~~towards~~ toward a corresponding mirror ~~45,44~~ 45, 44. The guide hole 47 is positioned in one side of the optical module 4. The guide hole 47 aligns with the screw hole 132 of the housing 1 and the screw 46 ~~engages with~~ is inserted through the guide hole 47 and engaged in the screw hole 132, thereby mounting the optical module 4 in the housing 1. The through hole 48 is defined in a sidewall 49 of the optical module 4, opposite from where the fiber collimators ~~80,81~~ 80, 81 are mounted. The screw rod 552 of the stepping motor 55 extends through the through hole 48 and into the cavity (not labeled) of the optical module 4. The

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guide pole 41 is received in the guide groove 301 of the carrier 30 for confining the movement of the carrier 30 along the screw rod 552, and ~~[[to]]~~ thereby ~~avoid~~ avoiding trembling of the carrier 30 when the screw rod 552 is rotated. --

Please replace paragraph [0025] on pages 6 and 7 with the following rewritten paragraph:

-- As shown in FIG. 3, FIG. 7 and FIG. 8, in assembly, the sliding patch 31 ~~engages with~~ is engaged in the slot 304 of the carrier 30. The filter 32 is inserted into the insertion slot 303 of the carrier 30. The attenuating means 3 is received in the optical module 4, with the guide pole 41 of the optical module 4 being received in the guide groove 301 of the carrier 30. The optical module 4 and the electrical driving element 5 are mounted in the inner cavity (not labeled) of the housing 1. The stepping motor 55 and the optical module 4 are fixed together by the screw 51. The pin holder 56 mounts in the pin holes 133 of the housing 1, and pin hole pads (not labeled) at the side of the stepping motor 55 and the resistor 57 engage with the pin holder 56. The resistor 57 of the electrical driving element 5 is received in the optical module 4, adjacent one inner sidewall of the optical module 4. The screw rod 552 of the electrical driving element 5 extends through the through hole 48 and engages with the inner screw 302 of the attenuating means 3. The wiper portion 310 of the attenuating means 3 contacts ~~with~~ the resistor 57 of the electrical driving element 5. The input fiber 87 is inserted through the boot 120 and the fiber housing 110 and is ~~assembled-attached~~ to the input fiber collimator 81. The output fiber 86 is inserted through the boot 121 and the fiber housing 111 and is ~~assembled-attached~~ to the output fiber collimator 80. The fiber collimators ~~80,81~~ 80, 81 are engaged in corresponding containing grooves ~~42,43~~ 42, 43 of the optical module 4, and the fiber housings ~~110,111~~ 110, 111 are engaged ~~with~~ in the side holes ~~130,131~~ 130, 131. The boots ~~120,121~~ 120, 121 are pulled over the respective fiber housings ~~110,111~~ 110, 111. --

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Please replace paragraph [0026] on pages 7 and 8 with the following rewritten paragraph:

-- In use, the stepping motor 55 drives the screw rod 552 in a clockwise and counterclockwise direction, as controlled by the resistance provided by the resistor 57. The screw rod 552 in turn drives the carrier 30 forward and backward along the guide pole 41, and thus the filter 32 moves forward and backward[[,]] as well. The optical density gradient of the filter 32 varies in a front to rear direction, so that as the filter 32 is carried forward and rearward backward, a light beam from the mirror 44 to the mirror 45 is attenuated by a different amount, depending on the position of the carrier 30 and filter 32 in the optical module 4. --